

Rheumatic Fever

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Rheumatic fever is a delayed manifestation of infection with group A streptococci (GAS) bacteria, also known as *Streptococcus pyogenes*. There are about 80 serotypes of GAS, although rheumatic fever appears to be associated with specific serotypes that tend to cause upper respiratory infections.

B. Clinical Description

Rheumatic fever is an inflammatory disease affecting primarily the heart, joints, subcutaneous tissues and central nervous system occurring as a delayed complication of infection by certain serotypes of GAS.

C. Reservoirs

Humans and some animals (cattle) are reservoirs. Overall, humans are the most important source of other human infections.

D. Modes of Transmission

The principal mode of transmission of GAS is person-to-person through large respiratory droplets or direct contact with patients or carriers (especially nasal carriers). Indirect contact through objects is rarely associated with illness but has occurred in daycare centers through play food and other shared toys. GAS bacteria can also be transmitted through ingestion of contaminated food (most commonly eggs, milk and milk products) resulting in outbreaks of GAS pharyngitis.

E. Incubation Period

The incubation period for GAS infection is usually 1 to 3 days, rarely longer. Delayed sequelae constituting rheumatic fever occur on average 19 days after onset of a preceding strep pharyngitis (range of 1 to 5 weeks).

F. Period of Communicability or Infectious Period

People with strep pharyngitis are usually infectious for 10 to 21 days in untreated, uncomplicated cases. If purulent discharges are present, the infectious period may extend to weeks or months. The ability to transmit the organism is usually terminated within 24 hours of appropriate antibiotic treatment.

G. Epidemiology

Rheumatic fever occurs throughout the world and is seen more frequently in developing countries. There is seasonal variation in its occurrence, with more cases during the late winter and early spring months, coincident with the occurrence of streptococcal pharyngitis. Cases of rheumatic fever are most commonly seen in children 3 to 15 years of age and rarely seen in infants and younger children. A person who has had rheumatic fever is at increased risk for recurrence of rheumatic fever after subsequent GAS infections.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. What To Report to the Massachusetts Department of Public Health

- The onset of an inflammatory disease of the heart, joints, subcutaneous tissues or central nervous system occurring 1 to 5 weeks after a lab-confirmed GAS infection.

Note: See Section 3) C below for information on how to report a case.

B. Laboratory Testing Services Available

The Massachusetts State Laboratory Institute, Reference Laboratory will test specimens for the presence of GAS. In some outbreak circumstances, isolates may be sent to the Centers for Disease Control and Prevention (CDC) for typing. For more information call the Reference Laboratory at (617) 983-6607.

3) DISEASE REPORTING AND ROUTINE CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify household contacts for culture and treatment.
- To initiate surveillance for concurrent cases of varicella in a school or daycare.
- To identify disease transmission sources of public health concern (*e.g.* contaminated food, or a health care worker who is a GAS carrier) and to stop transmission from such sources.

B. Laboratory and Healthcare Provider Reporting Requirements

Refer to the lists of reportable diseases (at the end of this manual's Introduction) for specific information.

C. Local Board of Health Reporting and Follow-Up Responsibilities

1. Reporting Requirements

Massachusetts Department of Public Health (MDPH) regulations (*105 CMR 300.000*) stipulate that each local board of health (LBOH) must report the occurrence of any case of rheumatic fever (as defined by the reporting criteria in Section 2A above). Current regulations require that cases be reported to the MDPH Division of Epidemiology and Immunization, Surveillance Program using an official MDPH *Generic Disease Reporting Form* (in Appendix A). Refer to the *Local Board of Health Reporting Timeline* (at the end of this manual's introductory section) for information on prioritization and timeliness requirements of reporting and case investigation.

2. Case Investigation

- a. It is the LBOH responsibility to complete an MDPH *Generic Case Report Form* (in Appendix A) by interviewing the case and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the case's healthcare provider or the medical record.
- b. Use the following guidelines to assist you in completing the form:
 - 1) Record rheumatic fever as the disease being reported.
 - 2) Record the demographic information.
 - 3) Record symptoms, date of symptom onset, whether hospitalized and other associated dates.
 - 4) Complete the "Import Status" section to indicate where the illness was acquired. If unsure, check "Unknown."
 - 5) Indicate the date of first positive GAS culture, if there was one. If other lab tests were used diagnostically (such as an anti-streptolysin O [ASO] or other serologic test), please indicate the type of test(s) used and date(s) tested. Record this information in the "Comments" section at the bottom of the page.
 - 6) Indicate the type of specimen from which group A streptococcus was isolated/identified (*e.g.*, blood, cerebrospinal fluid). Record this information in the "Comments" section at the bottom of the page.
 - 7) Include any additional comments regarding the case in the "Comments" section at the bottom of the page.
 - 8) If you have made several attempts to obtain case information, but have been unsuccessful (*e.g.*, the case or healthcare provider does not return your calls or respond to a letter, or the case refuses to

divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note on the form the reason why it could not be filled out completely.

- c. After completing the form, attach lab report(s) and mail (in an envelope marked “Confidential”) to the MDPH Division of Epidemiology and Immunization, Surveillance Program. The mailing address is:
MDPH, Division of Epidemiology and Immunization
Surveillance Program, Room 241
305 South Street
Jamaica Plain, MA 02130
- d. Institution of disease control measures is an integral part of case investigation. It is the LBOH responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4), Controlling Further Spread.

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (105 CMR 300.200)

Minimum Period of Isolation of Patient

Until 24 hours after initiation of antibiotic therapy.

Minimum Period of Quarantine of Contacts

Search for carriers among close contacts and treat with antibiotics.

B. Protection of Contacts of a Case

Siblings and other household contacts of a case should have throat cultures taken and, if positive for GAS, be treated with antibiotics. Other close contacts (those in contact with the case’s respiratory secretions) should be evaluated and cultured if symptomatic.

C. Managing Special Situations

Daycare

Consider throat cultures for all symptomatic daycare attendees and staff who are close contacts (*i.e.*, those in contact with the case’s respiratory secretions), with subsequent antibiotic treatment of those found to be GAS culture positive. Contact the Division of Epidemiology and Immunization for assistance in managing follow-up of a case of rheumatic fever in a daycare setting.

School

Consider throat cultures for all symptomatic classroom members and other close contacts (*i.e.*, those in contact with the case’s respiratory secretions), with subsequent antibiotic treatment of those found to be GAS culture positive. Contact the Division of Epidemiology and Immunization for assistance in managing follow-up of a case of rheumatic fever in a school setting.

Reported Incidence Is Higher than Usual/Outbreak Suspected

If the number of reported cases of rheumatic fever or other serious GAS infections in your city/town is higher than usual, or if you suspect an outbreak, contact the epidemiologist on-call at the Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases that may cross several town lines and therefore be difficult to identify at a local level.

D. Preventive Measures

Environmental Measures

Advise daycare centers to clean toys daily using an approved disinfectant (*e.g.*, an EPA-registered sanitizing solution) and to discourage the use of play food, which facilitates the transmission of not only this bacterium

but many others as well. The MDPH *Health & Safety in Child Care Manual* has more detailed information on creating a healthful environment.

Personal Preventive Measures/Education

Advise individuals to:

- Practice good personal hygiene, emphasizing the need for proper handwashing.
- Avoid sharing food, drinks, cigarettes, eating or drinking utensils, or other personal items such as lip gloss.

ADDITIONAL INFORMATION

The following is the formal CDC surveillance case definition for rheumatic fever. It is provided for your information only. It is not necessary to use this information for reporting or investigating a case. (CDC case definitions are used by the state health department and CDC to maintain uniform standards for national reporting.) For reporting a case to the MDPH, use the criteria described in Section 2) A of this chapter.

Clinical description

An inflammatory illness that occurs as a delayed sequela of group A streptococcal infection.

Major Criteria: carditis, polyarthritis, chorea, subcutaneous nodules, and erythema marginatum.

Minor Criteria: a) previous rheumatic fever or rheumatic heart disease; b) arthralgia; c) fever; d) elevated erythrocyte sedimentation rate, positive C-reactive protein, or leukocytosis; and e) prolonged PR interval on an electrocardiogram.

Laboratory criteria for diagnosis

No specific laboratory test exists for the diagnosis of rheumatic fever.

Case classification

Confirmed: an illness characterized by a) two major criteria or one major and two minor criteria (as described in Clinical Description) and b) supporting evidence of preceding group A streptococcal infection.

Comment

Supporting evidence to confirm streptococcal infection includes increased antistreptolysin-O or other streptococcal antibodies, throat culture positive for group A streptococcus, or recent scarlet fever. The absence of supporting evidence of preceding streptococcal infection should make the diagnosis doubtful, except in Sydenham chorea or low-grade carditis when rheumatic fever is first discovered after a long latent period from the antecedent infection.

REFERENCES

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CDC. Case Definitions for Infectious Conditions Under Public Health Surveillance, *MMWR*. 1997; 46:RR-10.

Chin, J., ed. *Control of Communicable Diseases Manual, 17th Edition*. Washington, DC, American Public Health Association, 2000.

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